US-PAT-NO: 6763104

DOCUMENT-IDENTIFIER: US 6763104 B1

TITLE: Call center IVR and ACD scripting method and graphical user interface

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Brief Summary Text - BSTX (4):

Calls centers that use digital **switching** systems have become commonplace in businesses and institutions throughout the United States and the world. Often these call systems use separate and functionally different automatic call distributor (ACD) servers and interactive voice response (IVR) servers. The ACD allows routing of calls received via a **switch** to a plurality of different agents, depending on the predetermined standards defined by the call center system. Examples of these standards include routing based on DNIS or ANI. Some call center systems also have skills based routing on a limited scale.

Brief Summary Text - BSTX (11):

In another aspect of the present invention, a call can be received within the call center **switch** from a public switched telephone network (PSTN) and the call is routed to a call center interactive voice response (IVR) server. The caller is queried to input a requested type of service. The call can also be routed back to the call center **switch** where the requested type of service can be matched to an agent and the call transferred to the agent. In still another aspect of the present invention, the call can be routed to another call center when the call has been in queue more than a predetermined period of time. A call can be prioritized based on one of at least number dialed (DNIS), number dialed from (ANI), and length of time a call is in queue. The call center system is also disclosed and includes a call center **switch** that receives incoming calls from a caller. A plurality of agents receives the routed calls where the agents are grouped by skills and each agent assigned a proficiency level for each skill. A processor is operatively connected to the **switch** for receiving the call from the call center **switch** and determining a requested type of service and what agent skills are required for handling the call. An automatic call distributor (ACD) routes an incoming call to an agent that has the highest proficiency level for the skills required for answering the call based on the requested type of service. At least one processor loads the graphical user interface of the ACD manager where a user can input information relating to the set up of stations, call center hours of operation, skills, DNIS and agents.

Drawing Description Text - DRTX (3):

FIG. 1 is an overall block diagram of the call center system of the present invention, a **switching** platform, public switched telephone network and a customer calling into the call center system.

Drawing Description Text - DRTX (6):

FIG. 4 is a block diagram illustrating the **switch** and call center system

messages transferred to the switch per minute. A memory load block 278 could show the reading in percentage of the server's memory currently being used. A memory usage history 280 could show a graph of the memory load on the server.

script & graph I

Detailed Description Text - DETX (77):

Various **switch** parameters can also be included where the database administrator or MIS personnel can configure the **switch** feature specific to the **switching** platform used to provide the **switching** matrix. This could allow a seamless alignment between the **switching** matrix and the call center system applications.

Detailed Description Text - DETX (97):

After the daily hours of operation are set, a user can also enter special hours for days that require adjusted hours of operation, such as by clicking holiday schedule tab 370 (FIGS. 23 and 29). This feature is especially useful for holidays, but can be used for other days, such as a regular staff meeting, when a user needs to deviate from the normal call center hours. If needed, the user can even set the call center to be completely closed on certain days. The day or range of days applying to the call center operation can be entered, as well as the month. A calendar can display a month at a time. A finished screen can confirm changes for the settings. An open time can also be set, such as in fifteen-minute increments. This can all be accomplished using menu-driven screens. It is also possible to use an advanced **format editor** dialog box 372 (FIG. 30), where entries, such as opening and closing dates and times, are entered via logical expressions in text boxes 374.

Fig 21

Detailed Description Text - DETX (103):

The DNIS button 310 of the main screen 300 toolbar 301 opens the setup DNIS dialog box or window 402, where a user can create, **modify, setup routing** features and disable the various DNIS numbers used in the call center system.

Detailed Description Text - DETX (157):

The Supervisor application of the present invention, every 15 minutes (or as configured with the **switch**) has the ACD server write out statistics to the historical database 120 of the SQL server 118. Managers are able to view, drill, filter the presentation of these statistics and retrie

DeTX(36)

where boards are inserted within the shelves and slots of a **switch** for a T1 trunk or analog line unit.

Drawing Description Text - DRTX (12):
FIG. 10 is a block diagram of the HIL signal circuits and the relation between the **switch** and call center system of the present invention.

Detailed Description Text - DETX (3):
As shown in FIG. 1, the call center system 100 works in conjunction with a **switching** platform 102, which in one aspect of the present invention, could be a 20-20 **switch** as manufactured by Harris Corporation of Melbourne, Fla. The **switching** platform 102 is connected to a public switched telephone network 104 and customer 106. The call center system 100 includes an Interactive Voice Response (IVR) server 108, which also doubles as a call logger/recorder. An Automated Call Distributor (ACD) server 110 includes an ACD manager application and also acts as a call center server administrator. It is connected via TCP/IP links 112, in one aspect of the invention, to individual agent workstations 114, the IVR server 108, and a call center supervisor 116 with a teleset. The IVR server 108 has bidirectional communication with the **switching** platform 102 and ACD server 110. A Structured Query Language based (SQL) database server 118 is connected (with historical database 120) to ACD server 110 and IVR server 108 via TCP/IP link connection 112. Naturally, the server 118 could work as an ACD server because it also is a Windows NT server, as is server 110. The dashed line indicates the close association among the various servers and applications.

Detailed Description Text - DETX (9):
The Computer Telephone Integration (CTI) contains developer **tools and programming** interfaces to allow development and integration of the system components, such as shown in FIGS. 1 and 3. It can reside as a node on a LAN or corporate WAN, and allows for existing disparate applications to communicate through a common interface as known to those skilled in the art. It also serves as an accessible networked link for new systems and applications to interface rapidly with the call center system components. The CTI can provide an interface between the call center system and a network environment that is CSTA, TSAPI and TAPI standard components, and translate various proprietary call control and telephony control commands, such as used with a Harris 20-20 **switch,** into a format that is widely accepted as the standard for call center applications.

Detailed Description Text - DETX (14):
Using the ACD server administrator 126, a database administrator or MIS personnel can open different windows to configure the parameters of the **switching** platform 102 and match up the **switch** features specific to the **switching** platform used to provide the **switching** matrix. This configuration ensures a seamless alignment between a **switching** matrix and system applications.

Detailed Description Text - DETX (23):
Installation of the software of the call center system of the present invention typically will require that the **switching** platform 102 be installed first and that the appropriate network topology be in place to accommodate the

host interface link (HIL) on LAN and network interfaces required by the different applications. IP addresses are required for each server as would be known to those skilled in the art. The total number of IP addresses required would ultimately depend on the number of servers and level of redundancy incorporated into the network topology. Power and space requirements would also be dependent on the total number of servers and level of redundancy required, as known to those skilled in the art.

Detailed Description Text - DETX (24):

Basic components of the **switching** platform 120 database are illustrated in FIG. 3. The **switching** platform uses components (shown by commonly known acronyms) used by those skilled in the art. These components include the BOA 150, TRU 152, EXT 154, Class of Service (COS) 156, FEA 158, ROU 160, CONN 162, PEL 164, BC 166, DIA 168, COL 170, PAT 172, FAC 174, TRU and IVR.

Detailed Description Text - DETX (25):

As shown in FIG. 4, the call processing through the **switching** platform 102 defines what type of circuit boards 175 are inserted into respective shelves and slots of the **switch** 102. These inserted cards operate with the TI trunk board or an analog line unit 176.

Detailed Description Text - DETX (26):

The basic call flow of the **switch** software contained on the **switching** platform 102 can be described as follows with reference to FIGS. 1 and 3.

Detailed Description Text - DETX (27):

1. Calls enter the **switch** 102 from the public switched telephone network 104 on an incoming trunk 152.

Detailed Description Text - DETX (34):

Under the COS prompt of the **switch,** a particular COS is added. The feature class 158 defines a unique set of system features. This table is checked to see if dialed feature access is allowed (internal features). The routing class (ROU) defines outbound routing privileges. The routing class gets checked in the route pattern (PAT) 172 (outbound privileges).

Detailed Description Text - DETX (36):

Under the COL prompt of the **switch,** a collect and route name is defined. All possible digit sequences can be entered. This is most likely where collections such as NXX XXX XXXX=route-request-1 will be defined in order to get a call to the call center system. Also collections such as 1XXX=STA can be entered in order to dial from extension 1000 to 1999 as an example. 1XXX is the dialing range for extension access.

Detailed Description Text - DETX (37):

Under the PAT 172 prompt of the **switch,** a route pattern name can be defined. A route pattern gets the call out of the **switch,** such as either to an IVR 108, as is the case with the call center, or to an outside trunk connection 152a. There is an ordered list of routing options, which may include queuing, for outgoing call completion. By the routing class, a user can specify who can and

cannot get routing out of the system. Also, day of week and time of day are configurable.

Detailed Description Text - DETX (38):
Under a fact prompt of the **switch,** a facility (FAC) 174 is defined. A facility points to a trunk group in order to get a call routed out of the system. For a HIL station, a facility states what profile of information to send to the host when dialed (e.g., profile 39 is used for HIL stations to send a packet of data to the host). For a facility pointing to a trunk group, commands such as SDI 15 are used to send up to 15 digits out of the system. These can be outpulsed on the trunk group via DTMF, in most cases.

Detailed Description Text - DETX (39):
Under the TRU prompt of the **switch,** a trunk group 152 is defined. A trunk group must all be connected to the same place (to the local CO or IVR) and will need an incoming COS and circuits defined as well.

Detailed Description Text - DETX (40):
The **switch** uses a route request as illustrated in FIG. 3. A call is received by the **switch**. Information is sent to the call center system 100 via a route request profile. The call center analyzes data and sends route update profile back to the **switch**. The call is routed to an agent according to new information (extension number) received. Each route request defines: (1) what profile the **switch** should use in its route request to the call center system; (2) the LAN link to which to send the message, if more than one; (3) timers for how long the **switch** should wait for an initial response message; and (4) failure destination to direct calls in the event of a LINK or call center outage. Normally these will be directed to a master number of a hunt group, with optics ready to answer these calls.

Detailed Description Text - DETX (41):
A route request configuration (FIG. 5) is operative with valid route request numbers, which are in the range from 1 to 20, corresponding to route-request-1 to route-request-20. The HIL protocol includes a set of predefined profiles that allow a user to define what call information is sent in route messages. The user can decide what types of information the host needs for different types of calls and can ensure that calls are routed to a route request that will contain the proper profile of information. The call center system 100 could use profile 39, which includes: dialed number, access code, authorization code (i.e., ANI), account code, initiating trunk group, initiating circuit, routing class, extension ANI, string and **switch** ID.

Detailed Description Text - DETX (43):
Communication between the **switch** and the call center system is established via the Host Interface Link (HIL), which in one aspect of the present invention, could be a LAN link. The Ethernet control unit (or LAN gateway) installed in the **switch** acts as a gateway between the LAN protocol stack and TCP/IP. The system supports a maximum of 16 LAN HILs.

Detailed Description Text - DETX (45):
A logical devices table (FIG. 7) defines logical names for devices

configured in the system device table. The name a user assigns to a LAN link must be a user defined name. The user will use this name when configuring other tables in the **switch** for the call center application. The logical device name may be up to 10 characters long. There are certain reserved names that cannot be used. The valid logical device type to use is call link.

Detailed Description Text - DETX (48):

In the basic **switch** process for the call center system operation of the present invention, calls are received by the **switch**. Information is sent to the call center system via HIL link. An idle agent is located. Update is routed back to the **switch** for idle station. This is how an agent gets the call. The application of an HIL signaled circuit involves agent stations where the call center system is responsible for delivering a call to an agent along with a screen of call related data on a separate terminal. In the case of the call center system 100, just how to answer the call will be displayed, unless the customer builds a screen pop. The tools are in place for this to happen, but it is not automatic. It allows the telephone to become a universal terminal. Ready, wrap and event are states that the agent may be in.

Detailed Description Text - DETX (50):

Calling a HIL station is similar to calling a normal station. Ring back is given to the caller during the call presenting phase. However, for some applications, it is not desirable for the caller to hear the ring back. Silence is a preferred option. The circuit location is an available port on an analog line unit in the **switch**. A class of service (COS) can be assigned and it enables an HIL station to place a call, as well as receive (a normal analog type of COS). The signaling type does not matter because it is ignored and an HIL process code is used instead.

Detailed Description Text - DETX (53):

In order to save agents and operator time, callers can first be sent to the IVR 108. As an example, callers can enter the digit "1" for a given type of service or a "2" for some other type of request. Once the IVR collects the appropriate request, it will transfer the call back to the **switch** so that it can then transfer it over to the call center system. Here the appropriate skill (based on the service that the caller requested), for a given agent can be matched and the call center system will send the appropriate process code back for an agent's HIL station.

Detailed Description Text - DETX (73):

An additional window screen 250 of advanced settings (FIG. 18) is provided by clicking the advanced button 252 located in the configure ACD server window 240. These advanced settings can include the HIL interface type and the type of link used to connect to the **switch**, such as the DCA serial link 254 or LAN TCP/IP link 256. Because a serial link is slower, a DCA serial link is only used for a small call center system. If a call center has more than 25 agents, a LAN TCP/IP link can be used. The user also sets all the parameters listed within data entry lines 258 based on the **switch**. The network address is the IP address.

Detailed Description Text - DETX (75):

Database settings 260 can also be established with a database server alias,

which is a BDE alias for connecting to the SQL server. A user name field is optional, but could be used to restrict access to the database. A default value could be SA for the system administrator. Passwords can also be entered such as a user name in a previous field, but would not be needed to access the database. The control tab could also include redundancy 262, which can include primary or backup servers 262a, 262b, as well as a backup host address 264 having the IP address of the backup host and a redundancy port 266, which is the IP port to allow communication between servers. An install license button 270 can be clicked to open a window that allows the entering of license keys. The usage tab 272 (FIG. 19) can be checked to show server memory. The memory block 274 could show the amount of available memory, the total memory and a total memory in use. An object block 276 could show the amount of dial pads and agents in use and the number of calls currently being handled, and the amount of RAM that each is using. The HIL/MIN reading is the number of messages transferred to the **switch** per minute. A memory load block 278 could show the reading in percentage of the server's memory currently being used. A memory usage history 280 could show a graph of the memory load on the server.

Detailed Description Text - DETX (77):

Various **switch** parameters can also be included where the database administrator or MIS personnel can configure the **switch** feature specific to the **switching** platform used to provide the **switching** matrix. This could allow a seamless alignment between the **switching** matrix and the call center system applications.

Detailed Description Text - DETX (97):

After the daily hours of operation are set, a user can also enter special hours for days that require adjusted hours of operation, such as by clicking holiday schedule tab 370 (FIGS. 23 and 29). This feature is especially useful for holidays, but can be used for other days, such as a regular staff meeting, when a user needs to deviate from the normal call center hours. If needed, the user can even set the call center to be completely closed on certain days. The day or range of days applying to the call center operation can be entered, as well as the month. A calendar can display a month at a time. A finished screen can confirm changes for the settings. An open time can also be set, such as in fifteen-minute increments. This can all be accomplished using menu-driven screens. It is also possible to use an advanced **format editor** dialog box 372 (FIG. 30), where entries, such as opening and closing dates and times, are entered via logical expressions in text boxes 374.

Detailed Description Text - DETX (103):

The DNIS button 310 of the main screen 300 toolbar 301 opens the setup DNIS dialog box or window 402, where a user can create, **modify, setup routing** features and disable the various DNIS numbers used in the call center system.

Detailed Description Text - DETX (157):

The Supervisor application of the present invention, every 15 minutes (or as configured with the **switch**) has the ACD server write out statistics to the historical database 120 of the SQL server 118. Managers are able to view, drill, filter the presentation of these statistics and retrieve reports from this database using the same flexible supervisor platform that provides the real-time reporting.

Detailed Description Text - DETX (219):

In another aspect of the present invention, various **tools permit the construction of scripts** in accordance with the present invention. String substitution allows variables to be substituted in any field that expects a string. To invoke substitution, a user can enclose a variable name in angled brackets (e.g., <var>). An expression evaluation allows complex mathematical expressions to be evaluated in real time. Several actions expect numeric values as parameters. In these cases, an expression may be used in place of a pure number. An expression includes numbers, variables and math operators.

Detailed Description Paragraph Table - DETL (7):

Default Field Description Configuration Wink A wink is a brief cycling of bit states on the Checked Before digital line - equivalent to toggling the phone Pickup off hook, then back on. Check this field to issue a wink before answering the incoming call. Wink This is equivalent to toggling the phone off Unchecked After hook, then back on. Check this field to issue Pickup a wink after answering the incoming call. Wink Controls the delay before or after the wink 500 Duration surrounding the actual answering of the call. If "Wink Before Pickup" is on, the wink will occur followed by (if the default value is used) a 500 ms delay before picking up the call. The half second delay in this case pre- vents the phone **switch** from misinterpreting the wink. Transfer Allows you to finely tune the timing of a call wait 250 ms Sequence transfer to another number. The default dial flash configuration should work in most cases. If hook you have trouble with the transfer, try chan- wait 250 ms ging the waits around the flashhook (this dial number simply means the phone is toggled on hook, wait 125 ms then back off). Use the add, delete and (i.e., waits insert buttons along with the options 1/4 sec, issue in the drop down menu (see list below) the flash hook, to change the transfer sequence wait 1/4 sec, instructions: dial the new wait x ns number, wait dial flashhook 1/8 sec, then dial number hang up) hangup pickup set DTI bits

Claims Text - CLTX (4):

4. A method according to claim 1, further comprising the steps of: receiving a call within a call center **switch** from a public switched telephone network (PSTN); routing the call to a call center Interactive Voice Response (IVR) server; and querying the caller to input a requested type for service.

Claims Text - CLTX (5):

5. A method according to claim 4, further comprising the step of routing the call back to the call center **switch,** matching the requested type of service to an agent, and transferring the call to the agent.

Claims Text - CLTX (10):

10. A method according to claim 8, further comprising the steps of: receiving a call within a call center **switch** from a public switched telephone network (PSTN); routing the call to the call center IVR server; and querying the caller to input a requested type for service.

Claims Text - CLTX (11):

11. A method according to claim 8, further comprising the step of routing

the call back to the call center **switch,** matching the requested type of service to an agent, and transferring the call to the agent.

Claims Text - CLTX (18):

18. A method according to claim 14, further comprising the steps of: receiving a call within a call center **switch** from a public switched telephone network (PSTN); routing the call to a call center Interactive Voice Response (IVR) server that is integrally functional with an ACD server; and querying the caller to input a requested type for service.

Claims Text - CLTX (19):

19. A method according to claim 18, further comprising the step of routing the call back to the call center **switch,** matching the requested type of service to an agent and transferring the call to the agent.

Claims Text - CLTX (21):

21. A call center system that routes calls to individual agents within a call center comprising; a call center **switch** that receives incoming calls from a caller a plurality of agents that receive routed calls, said agents being grouped by skills, wherein each agent is assigned a proficiency level for each skill; an interactive voice response (IVR) server that is operatively connected to the **switch** for receiving the call from the call center **switch** and soliciting information from a caller to determine a requested type of service and what agent skills are required for handling the call; and an automatic call distributor (ACD) server that is functionally integrated with the IVR server for routing an incoming call to an agent that has the highest proficiency level for the skills required for answering the call based on the requested type of service, and operative to hold calls in queue a predetermined period of time in order to obtain an agent with the highest proficiency level before routing the call to an agent having a lower proficiency level.

Claims Text - CLTX (24):

24. A call center system that routes calls to individual agents within a call center comprising: a call center **switch** that receives incoming calls from a caller; a plurality of agents that receive routed calls, said agents being grouped by skills, wherein each agent is assigned a proficiency level for each skill; a processor that is operatively connected to the **switch** for receiving the call from the call center **switch** and determining a requested type of service and what agent skills are required for handling the call; an automatic call distributor (ACD) server for routing an incoming call to an agent that has the highest proficiency level for the skills required for answering the call based on the requested type of service, and operative to hold calls in queue a predetermined period of time in order to obtain an agent with the highest proficiency level before routing the call to an agent having a lower proficiency level; and at least one processor for operating an ACD manager having a graphical user interface where a user can input information relating to the setup of stations, call center hours of operation, skills, DNIS, and agents.

ROUTE REQUEST CONFIGURATION

```
A ...?System
HIL ...? Route
HILROUTE ...? ADD

Route Request Name ..... ROUTE-REQUEST-1

Profile Number ..... 39

Logical Device Name ..... LINKONE

Failure Destination ..... STA
```

FIG. 5.

SYSTEM DEVICE CONFIGURATION

```
A ...? System
SYSEDT ...? Device
SYSDEV ...? List

System Device .....          L1

LINK type .....              CALL-LINK

Link media Type .....        LAN

HIL Link Failure Queue Timer ..... 5 seconds
```

FIG. 6.

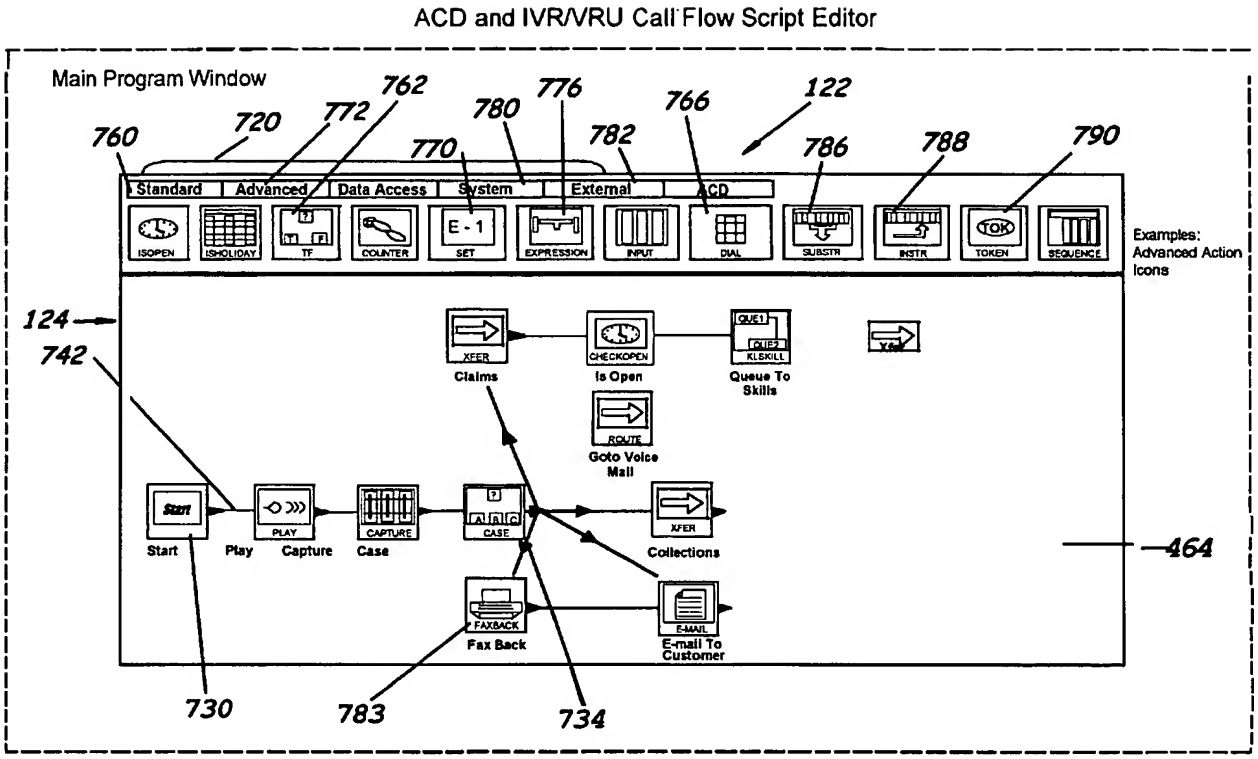
ACD and IVR/VRU Call Flow Script Editor
Main Program Window
760
720
772
762
770
780
776
782
766
122
786
788
790
Standard
Advanced
Data Access
System
External
ACD
ISOPEN
ISHOLIDAY
TF
COUNTER
E - 1
SET
EXPRESSION
INPUT
DIAL
SUBSTR
INSTR
TOKEN
SEQUENCE
Examples:
Advanced Action
Icons
124
742
XFER
Claims
CHECKOPEN
Is Open
QUE1
QUE2
KLSKILL
Queue To
Skills
ROUTE
Goto Voice
Mail
Start
PLAY
Play
CAPTURE
Capture
CASE
Case
XFER
Collections
464
FAXBACK
Fax Back
E-MAIL
E-mail To
Customer
730
783
734

FIG. 2.

OpenLAN HIL Message Format

Field Name	Size	Description
Message Count	16 bits	Number of HIL Messages in OpenLAN messaae.
Message Length	16 bits	Length of the following HIL message.
Function Code	2 bytes	Identifies HIL message.
Process Code	1byte	Identifies message subfunction.
Message Data	Variable	Info required by message.
Fill (message of odd size only)	1byte	Used only to change message of odd to even byte.

FIG. 9.

HIL Signaled Circuits

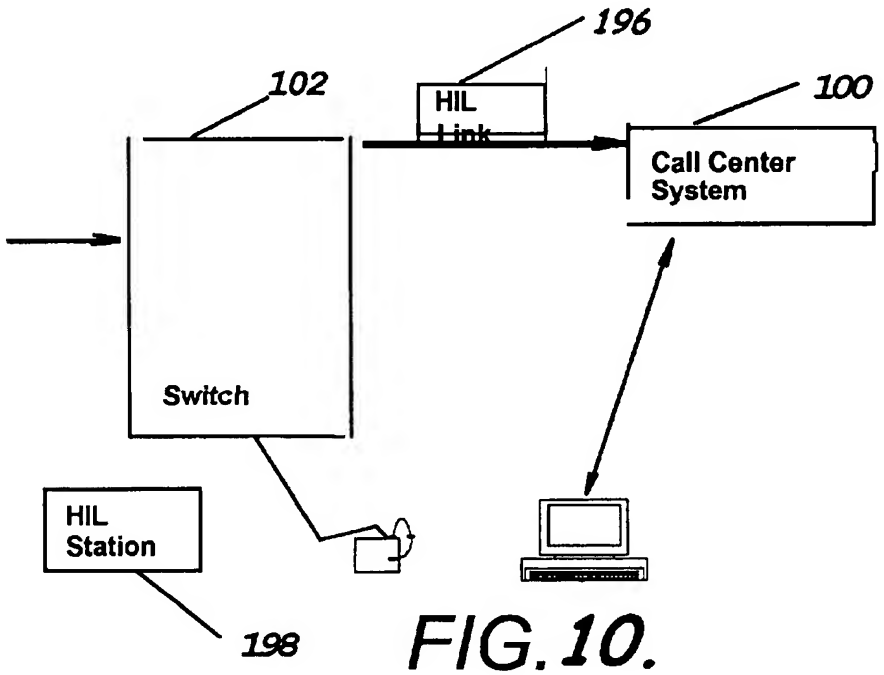

FIG. 10.

US006763104B1

(12) **United States Patent**
Judkins et al.

(10) **Patent No.: US 6,763,104 B1**
(45) **Date of Patent: Jul. 13, 2004**

(54) **CALL CENTER IVR AND ACD SCRIPTING METHOD AND GRAPHICAL USER INTERFACE**

(75) Inventors: **J. Andrew Judkins**, Centerville, UT (US); **Michael Shelton**, Salt Lake City, UT (US); **David Peterson**, Pleasant Grove, UT (US)

(73) Assignee: **Teltronics, Inc.**, Petaluma, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/513,231**

(22) Filed: **Feb. 24, 2000**

(51) **Int. Cl.**[7] **H04M 5/00**
(52) **U.S. Cl.** **379/265**; 379/265.09; 379/265.11
(58) **Field of Search** 379/265.02, 265.09, 379/265.11

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,452,341 A		9/1995	Sattar	379/88
5,479,487 A		12/1995	Hammond	379/67
5,586,179 A		12/1996	Stent et al.	379/265
5,623,540 A		4/1997	Morrison et al.	379/115
5,633,924 A		5/1997	Kaish et al.	379/266
5,675,637 A		10/1997	Szlam et al.	379/142
5,825,869 A		10/1998	Brooks et al.	379/265
5,828,747 A		10/1998	Fisher et al.	379/309
5,832,059 A		11/1998	Aldred et al.	379/34
5,867,562 A		2/1999	Scherer	379/88
5,870,464 A		2/1999	Brewster et al.	379/219
5,903,641 A		5/1999	Tonisson	379/266
5,943,416 A		8/1999	Gisby	379/265
5,963,635 A		10/1999	Szlam et al.	379/309
5,970,065 A		10/1999	Miloslavsky	370/352
5,974,135 A		10/1999	Breneman et al.	379/265
6,424,709 B1	*	7/2002	Doyle et al.	379/265
6,493,695 B1	*	12/2002	Pickering et al.	704/67

* cited by examiner

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(74) *Attorney, Agent, or Firm*—Bracewell & Patterson, LLP

(57) **ABSTRACT**

A call center system and method of routing calls to individual agents within a call center is disclosed. Skills data, including a listing of skills and proficiency levels for each skill, are input via an automatic call distributor (ACD) manager having graphical user interface (GUI), to establish skills that will be available within the call center. Agents are set up that are used within the call center by listing each agent within the ACD manager and selectively mapping skills to each individual agent via the ACD manager and corresponding to what types of skills the agent possesses. A call is received within the call center and a requested type of service is determined and also what skills are required for answering the call are determined. The call is routed to an agent that has the highest efficiency level for the skills required for answering the call based on the requested type of service.

34 Claims, 48 Drawing Sheets

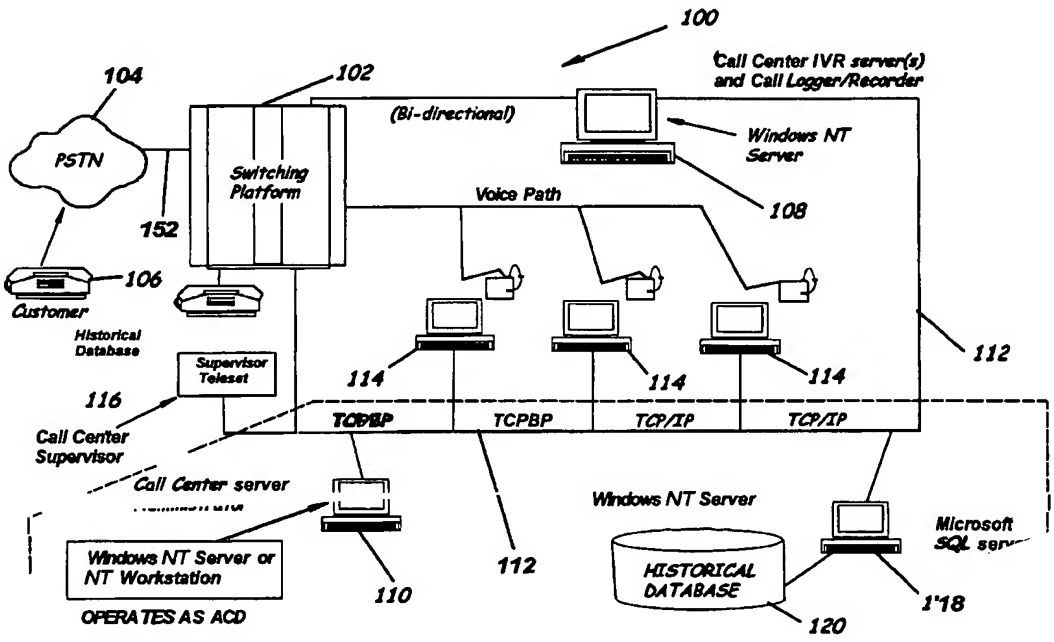
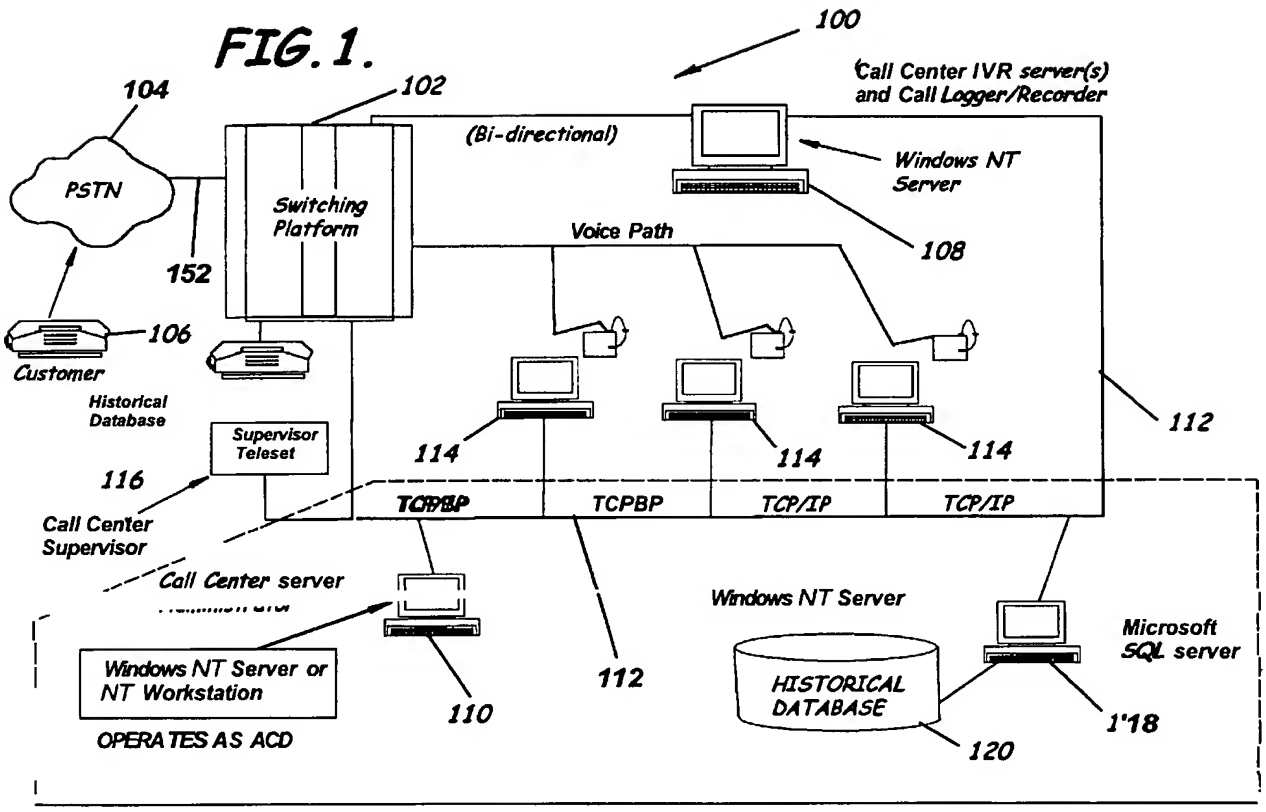


FIG. 1.


100
Call Center IVR server(s) and Call Logger/Recorder
104
102
(Bi-directional)
Windows NT Server
PSTN
Switching Platform
Voice Path
108
152
106
Customer
Historical Database
Supervisor Teleset
112
114
114
114
116
TCPBP
TCPBP
TCP/IP
TCP/IP
Call Center Supervisor
Call Center server
Windows NT Server
Microsoft SQL server
Windows NT Server or NT Workstation
112
HISTORICAL DATABASE
110
118
OPERATES AS ACD
120

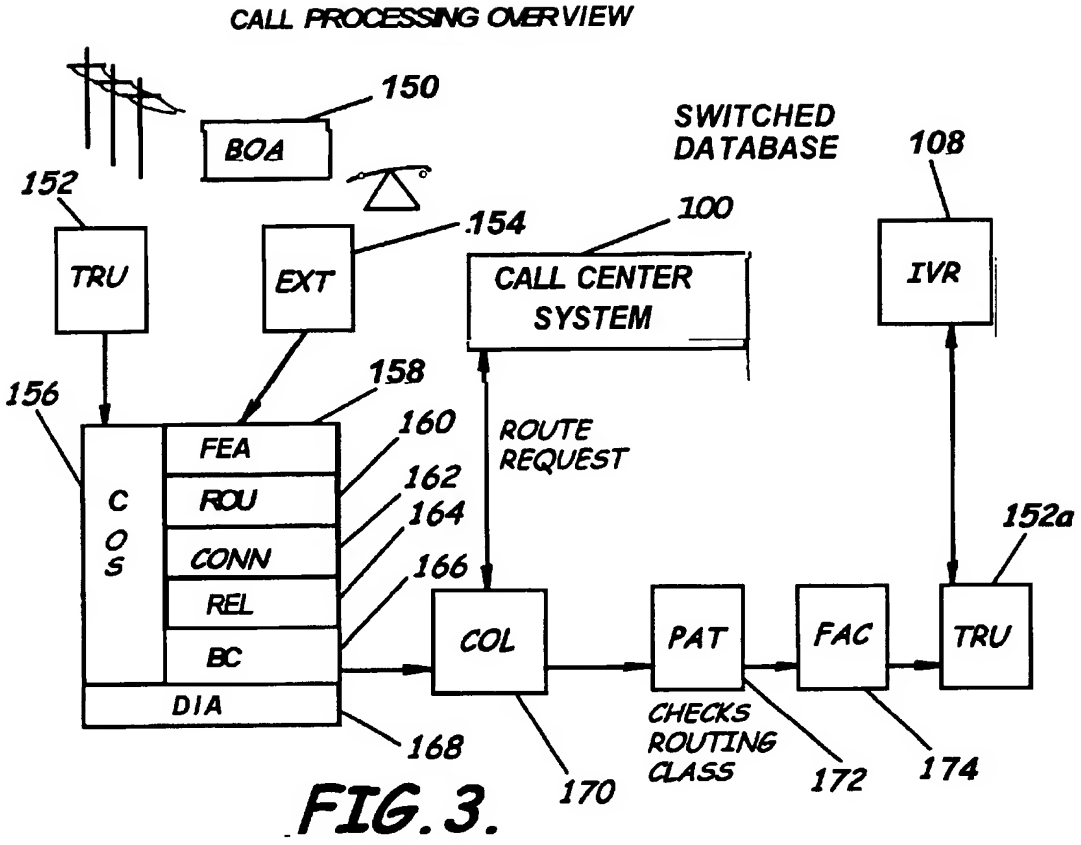
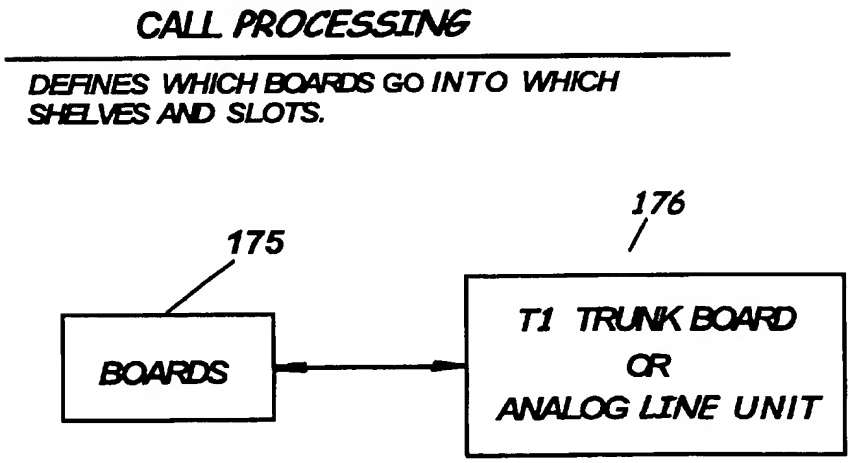

CALL PROCESSING OVERVIEW
150
BOA
SWITCHED DATABASE
108
152
154
100
TRU
EXT
CALL CENTER SYSTEM
IVR
158
156
160
ROUTE REQUEST
FEA
162
ROU
164
C O S
CONN
166
152a
REL
BC
COL
PAT
FAC
TRU
DIA
168
CHECKS ROUTING CLASS
170
172
174

FIG. 3.

FIG. 4.


CALL PROCESSING
DEFINES WHICH BOARDS GO INTO WHICH SHELVES AND SLOTS.
176
175
BOARDS
T1 TRUNK BOARD OR ANALOG LINE UNIT

SYSTEM LOGICAL DEVICE CONFIGURATION

```
A ... ? System
SYSEDT ... ? Logical
SYSLOG ... ? List

Logical Device Name ..... LINKONE

Logical Device Type ..... CALL-LINK

System Device ..... L1
```

FIG. 7.

HIL MESSAGE FORMAT (SERIAL)

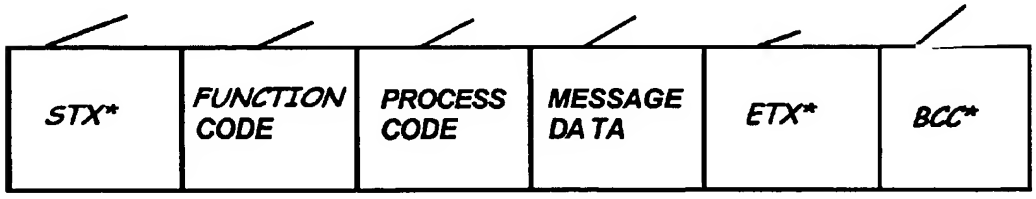


FIG. 8.

HIL Stations

Extension Number	2020
Extension Type	HILSTA
Logical Device Name	LinkOne
Facility Number	15
Ringback Type	Silent
Circuit Location	01-14-03
Class of Service	2 Dial
Signaling Type	DP*

FIG. 11.

Facility number	15
Trunk Group number	None
Outgoing COS number	3
Outpulse command	PRESENT 39 WPROGRESS 60

FIG. 12.

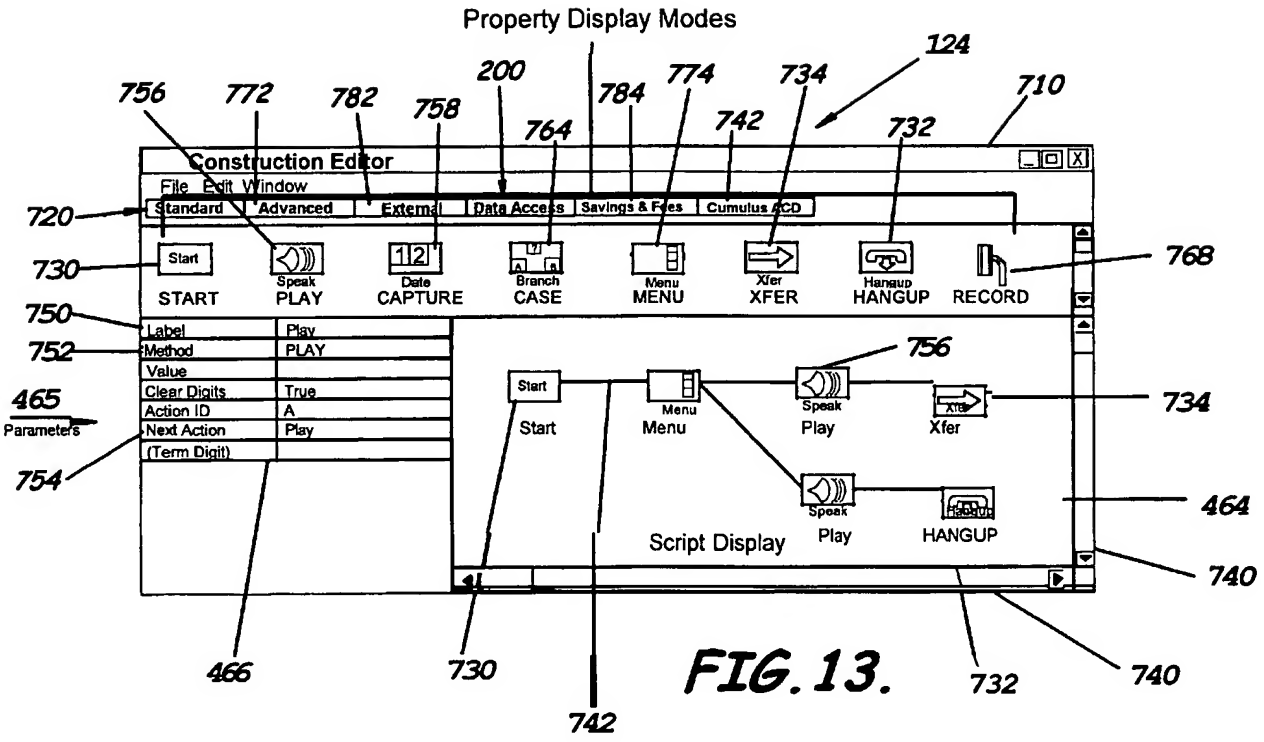

Property Display Modes
124
710
756
772
782
758
200
784
774
734
742
732
764
Construction Editor
File Edit Window
Standard
Advanced
External
Data Access
Savings & Fees
Cumulus ACD
720
730
768
750
752
465
754
Start
Speak
Date
Branch
Menu
Xfer
Hangup
START
PLAY
CAPTURE
CASE
MENU
XFER
HANGUP
RECORD
Label
Method
Value
Clear Digits
Action ID
Next Action
(Term Digit)
Play
PLAY
True
A
Play
Parameters
Start
Menu
Speak
Xfer
Play
Script Display
HANGUP
464
740
466
730
742
732
740

FIG. 13.

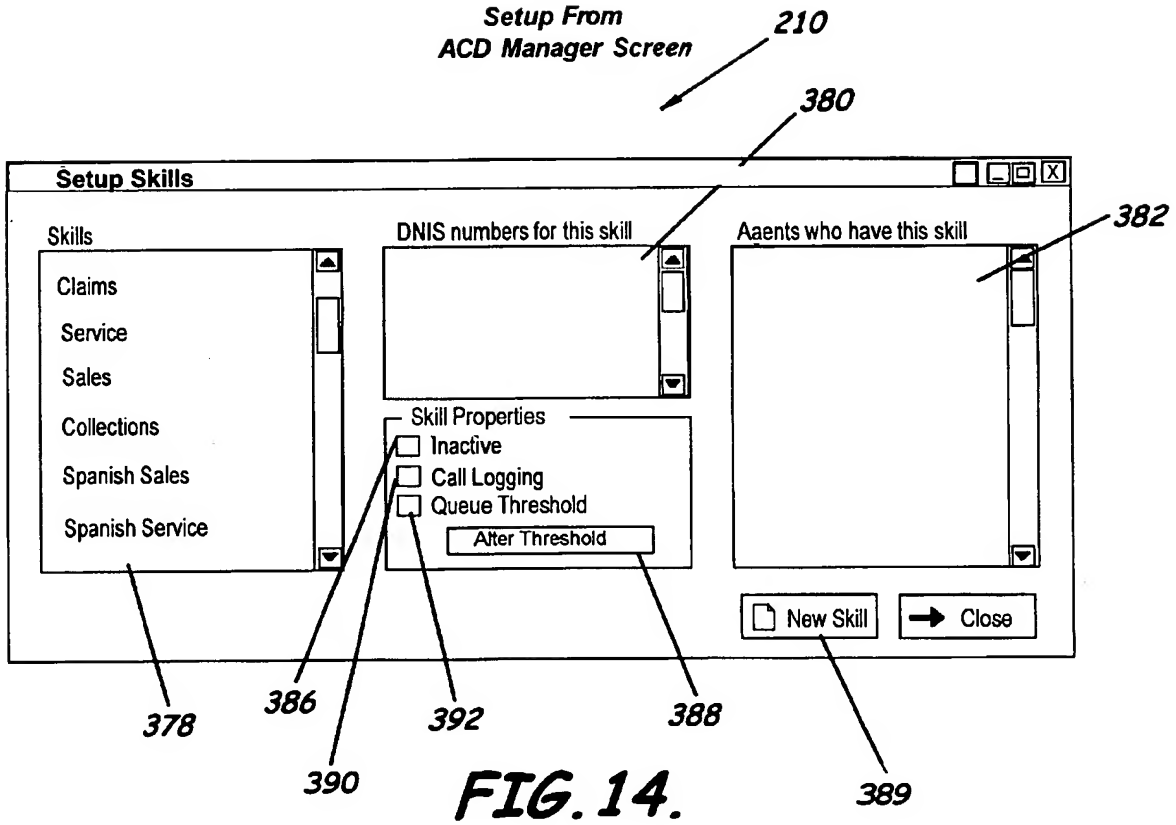

Setup From
ACD Manager Screen
210
380
Setup Skills
Skills
Claims
Service
Sales
Collections
Spanish Sales
Spanish Service
DNIS numbers for this skill
Skill Properties
Inactive
Call Logging
Queue Threshold
After Threshold
Aaents who have this skill
382
New Skill
Close
378
386
390
392
388
389

FIG. 14.

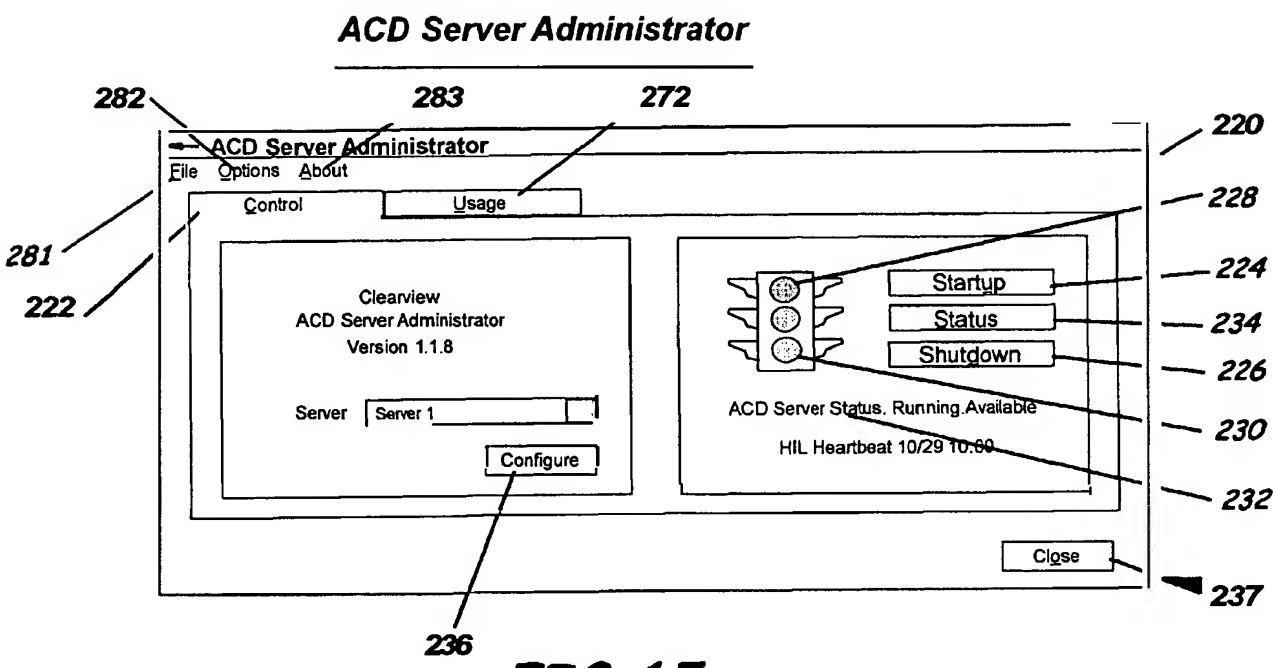
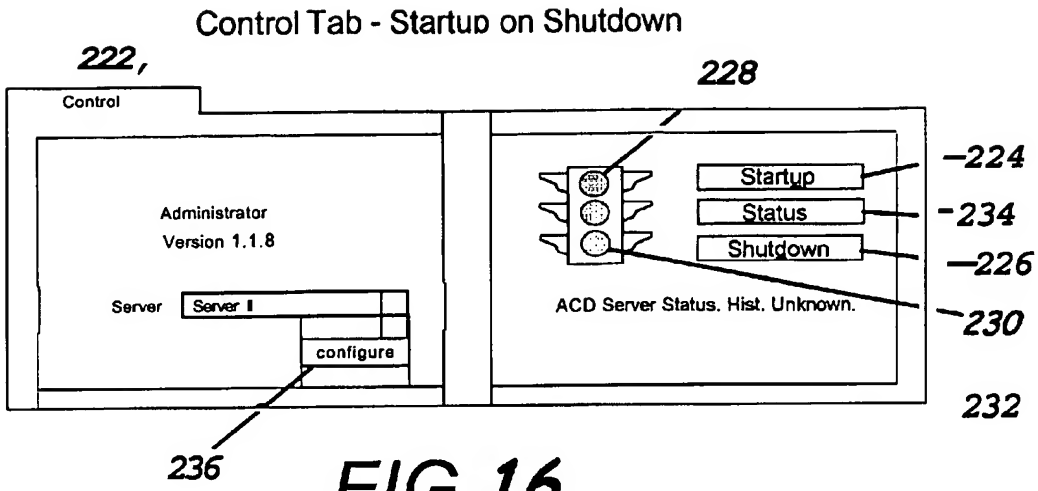
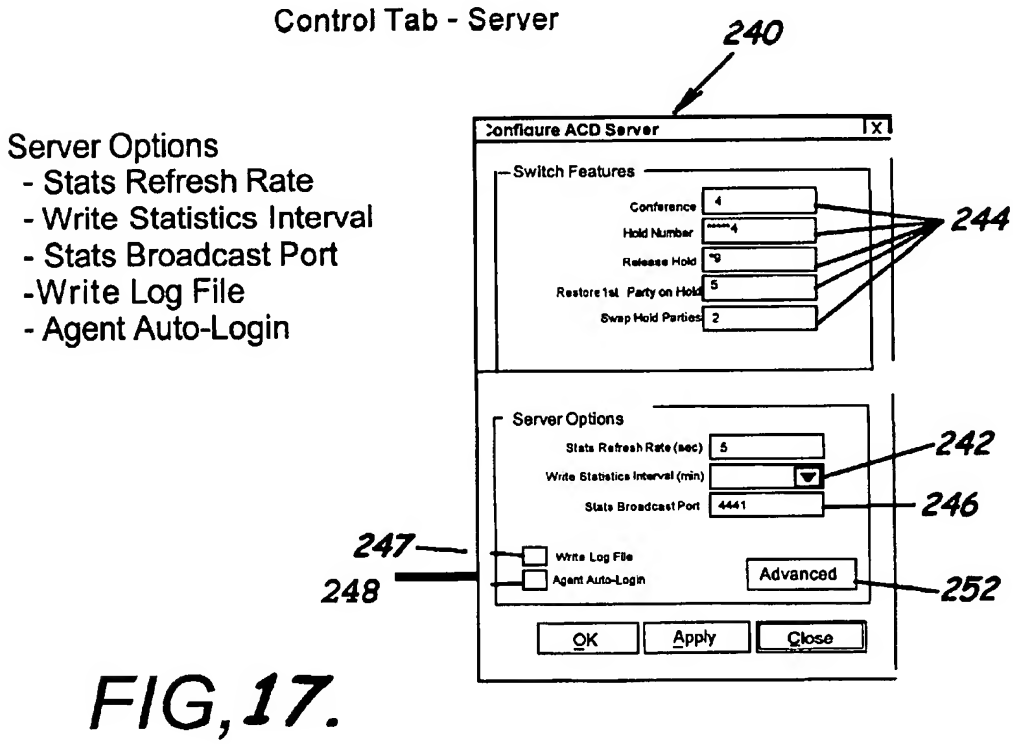

ACD Server Administrator
282
283
272
220
ACD Server Administrator
File Options About
Control
Usage
228
281
222
Clearview
ACD Server Administrator
Version 1.1.8
Server
Server 1
Configure
Startup
Status
Shutdown
224
234
226
230
ACD Server Status. Running.Available
HIL Heartbeat 10/29 10:00
232
Close
237
236

FIG. 15.


Control Tab - Startup on Shutdown
222,
228
Control
Administrator
Version 1.1.8
Server
Server 1
configure
Startup
Status
Shutdown
ACD Server Status. Hist. Unknown.
224
234
226
230
232
236

FIG, 16.


Control Tab - Server
240
Server Options
- Stats Refresh Rate
- Write Statistics Interval
- Stats Broadcast Port
-Write Log File
- Agent Auto-Login
Configure ACD Server
Switch Features
Conference
Hold Number
Release Hold
Restore 1st Party on Hold
Swap Hold Parties
244
Server Options
Stats Refresh Rate (sec)
Write Statistics Interval (min)
Stats Broadcast Port
4441
242
246
247
248
Write Log File
Agent Auto-Login
Advanced
252
OK
Apply
Close

FIG, 17.

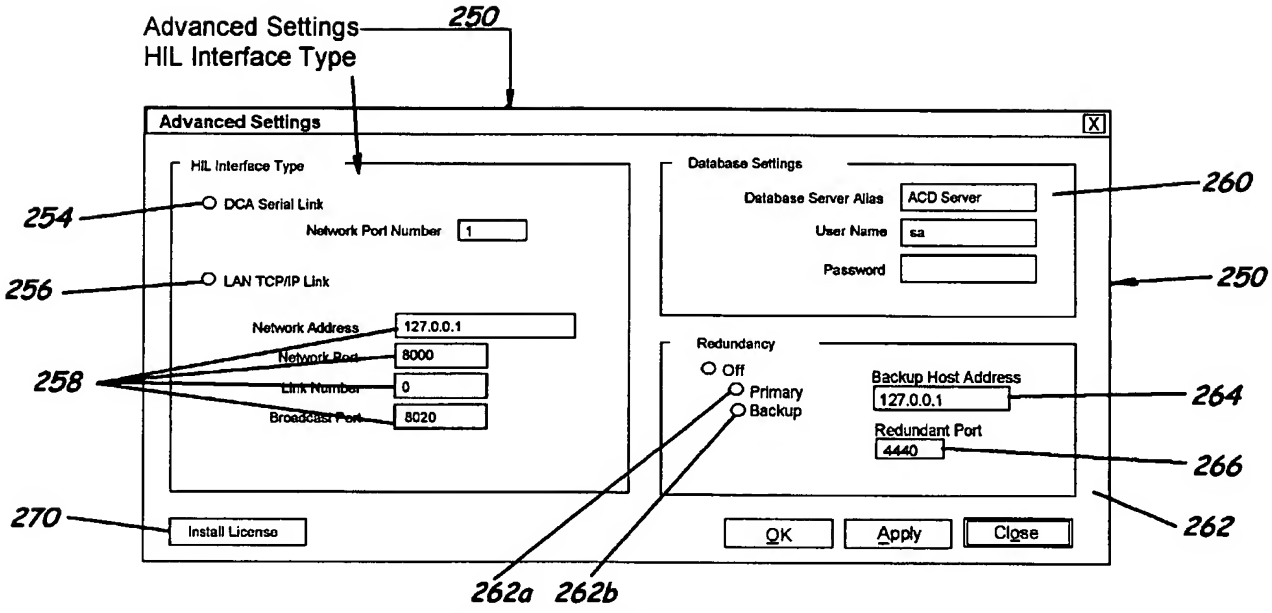

Advanced Settings
HIL Interface Type
250
Advanced Settings
HIL Interface Type
DCA Serial Link
Network Port Number
1
LAN TCP/IP Link
Network Address
127.0.0.1
Network Port
8000
Link Number
0
Broadcast Port
8020
Database Settings
Database Server Alias
ACD Server
User Name
sa
Password
Redundancy
Off
Primary
Backup
Backup Host Address
127.0.0.1
Redundant Port
4440
Install License
OK
Apply
Close
254
256
258
260
250
264
266
270
262
262a
262b

FIG. 18.

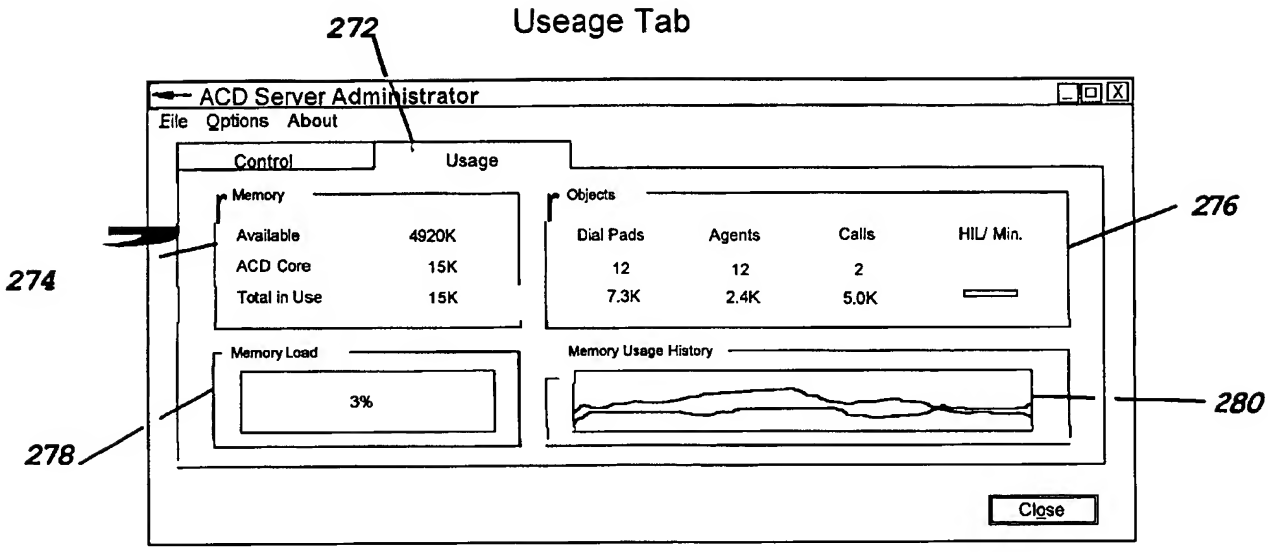

272
Useage Tab
ACD Server Administrator
File Options About
Control
Usage
Memory
Available 4920K
ACD Core 15K
Total in Use 15K
Objects
Dial Pads Agents Calls HIL/ Min.
12 12 2
7.3K 2.4K 5.0K
Memory Load
3%
Memory Usage History
Close
274
276
278
280

FIG. 19.

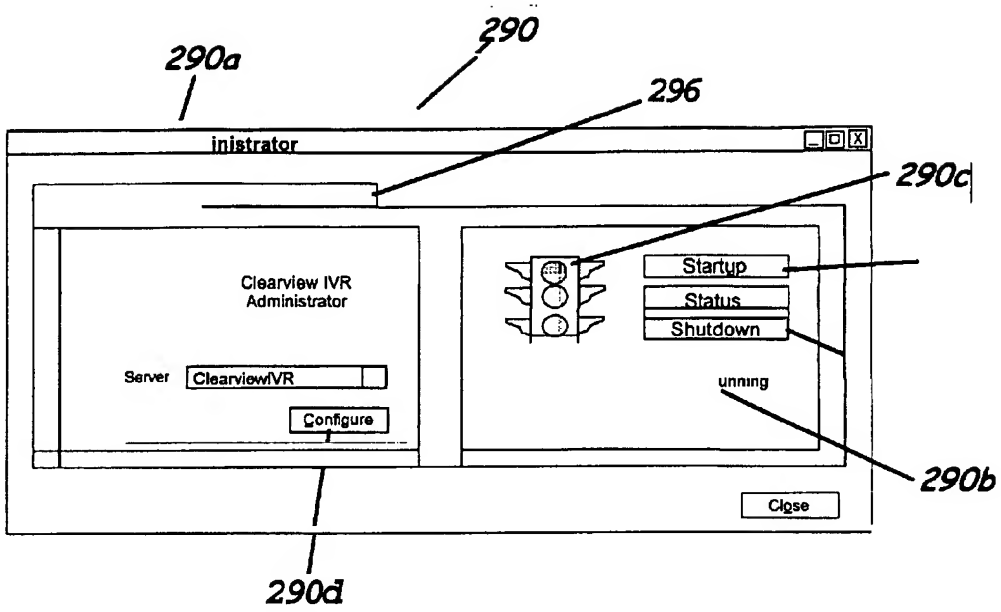


FIG. 19A.

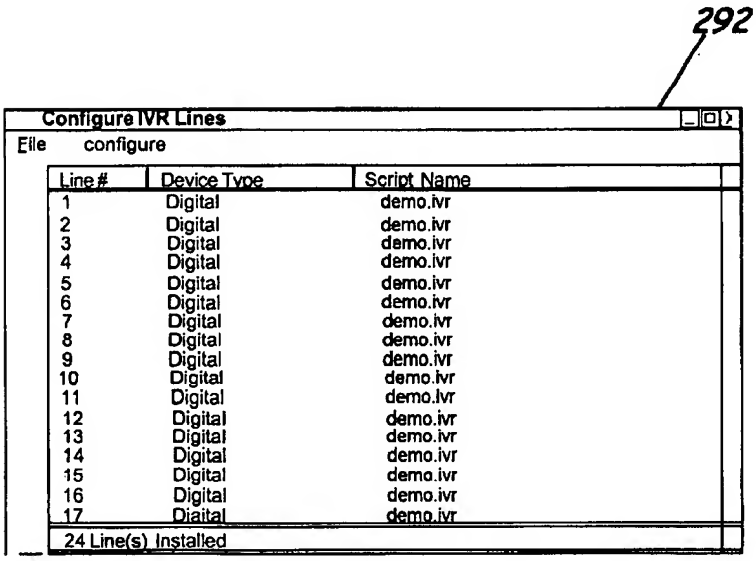


FIG. 19B.

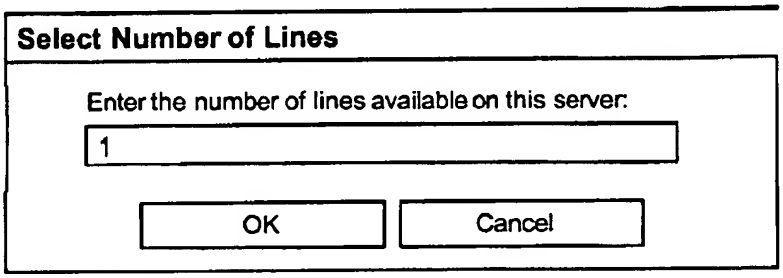


FIG. 19C.

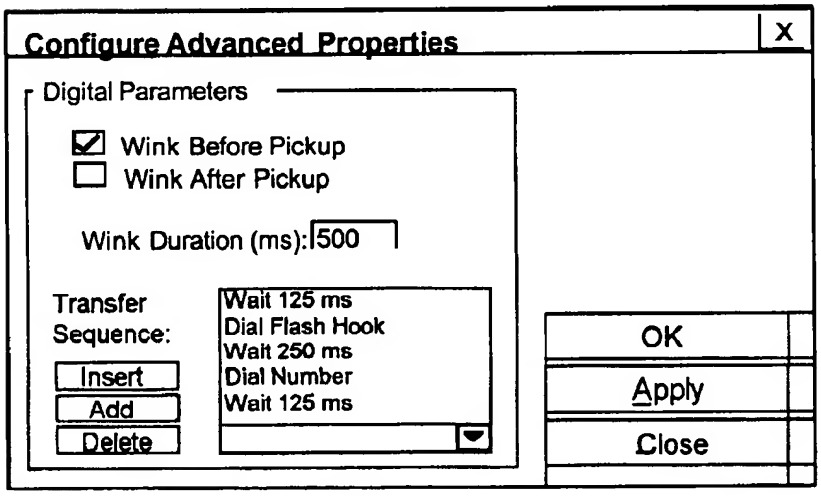


FIG. 19D.